TRENDS

Telehealth: Home monitoring promises earlier detection and improved care

By Leslie Limon

Imagine a heart-disease patient in his 70s, on Medicare, with a total of three emergency-room visits and two hospital stays in the past year. Recently discharged, he's home for now—until his symptoms flare again and his doctor sends him back to the hospital, where he can be monitored more closely.

This is an increasingly common scenario among those who make up our country's aging population. Of the 133 million Americans who suffer from chronic illness, nearly half of whom have more than one ailment, most are 65 or older. During the period from 1980 to 2008, chronic care accounted for about 80 percent of Medicare cost increases.

Cost, however, is only one health care challenge this country faces. Access is another, and not only in historically underserved areas. The United States could have nearly 63,000 fewer doctors than needed by 2015, the Association of American Medical Colleges has projected.

Enter telehealth: remote health monitoring that uses mobile phone and Internet technologies, not unlike a home security system for the body. Using a scale, blood-pressure cuff, pulse oximeter and thermometer, a patient takes his or her own vital signs daily at home and transmits them through a wireless hub to a remote server. The server converts the data into a format enabling comparison and analysis, stores it and transmits it to a nurse's workstation. The nurse monitors the data, sends medication reminders, alerts the patient's doctor about irregularities and submits weekly reports to the doctor for review.

The implications for health care and prevention are enormous. Remote monitoring of people at risk for preventable illness can keep it at bay or detect it early, leading to more effective treatment plans and better outcomes. It can allow practitioners to keep a close eye on patients suffering from a range of chronic conditions and flag problems before they turn into emergencies. A New York City-based nonprofit called Selfhelp Community Services, for example, offers telehealth services to monitor the vital signs and medications of elderly residents in housing complexes, allowing them to continue to live independently. Telehealth lowers hospitalization rates as well. A Massachusetts post-discharge cardiac-care program, for example, cut hospital readmissions in half.

Though self-monitoring requires no technical savvy, it can be tricky to convince people to sign up. Patients may lack confidence in using the devices properly, be reluctant to lose face-to-face practitioner relationships, and have concerns about privacy and data security. Telehealth providers use support and coaching to surmount these hurdles.

Meanwhile, pilot studies and programs are converting skeptics among practitioners, who find that telehealth can improve quality of care, minimize errors and save time. "Imagine the data going into a database and, with advanced analytics, showing up on caregivers' dashboards in a format they can monitor," said Wullianallur "RP" Raghupathi, professor of information

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Advanced analytics also boost the potential of data mining to reveal drug side effects and other health correlations within a broader population. "Before," said Raghupathi, "data would sit in yellow folders that no one had the time to go through. Now it will go to central computer systems for analysis."

Raghupathi intends to team up with local community agencies and service organizations to explore the use of mobile and Internet technologies to monitor the vital signs of seniors and others with chronic diseases. Over the next six months, they will assess the capability of the local infrastructure to transmit large data files. Then they will pursue potential collaborations with nearby hospitals and wireless-communications companies.

What does the future hold? From an economic perspective, remote health monitoring could yield this country a net annual benefit of about $12.1 billion, according to a Brookings Institution report. From a health care standpoint, IBM, for example, envisions a "fully integrated system of in-home and in-hospital monitoring, data integration, electronic health records and physician/patient exchanges." For those needing chronic care, this is a worthy goal.
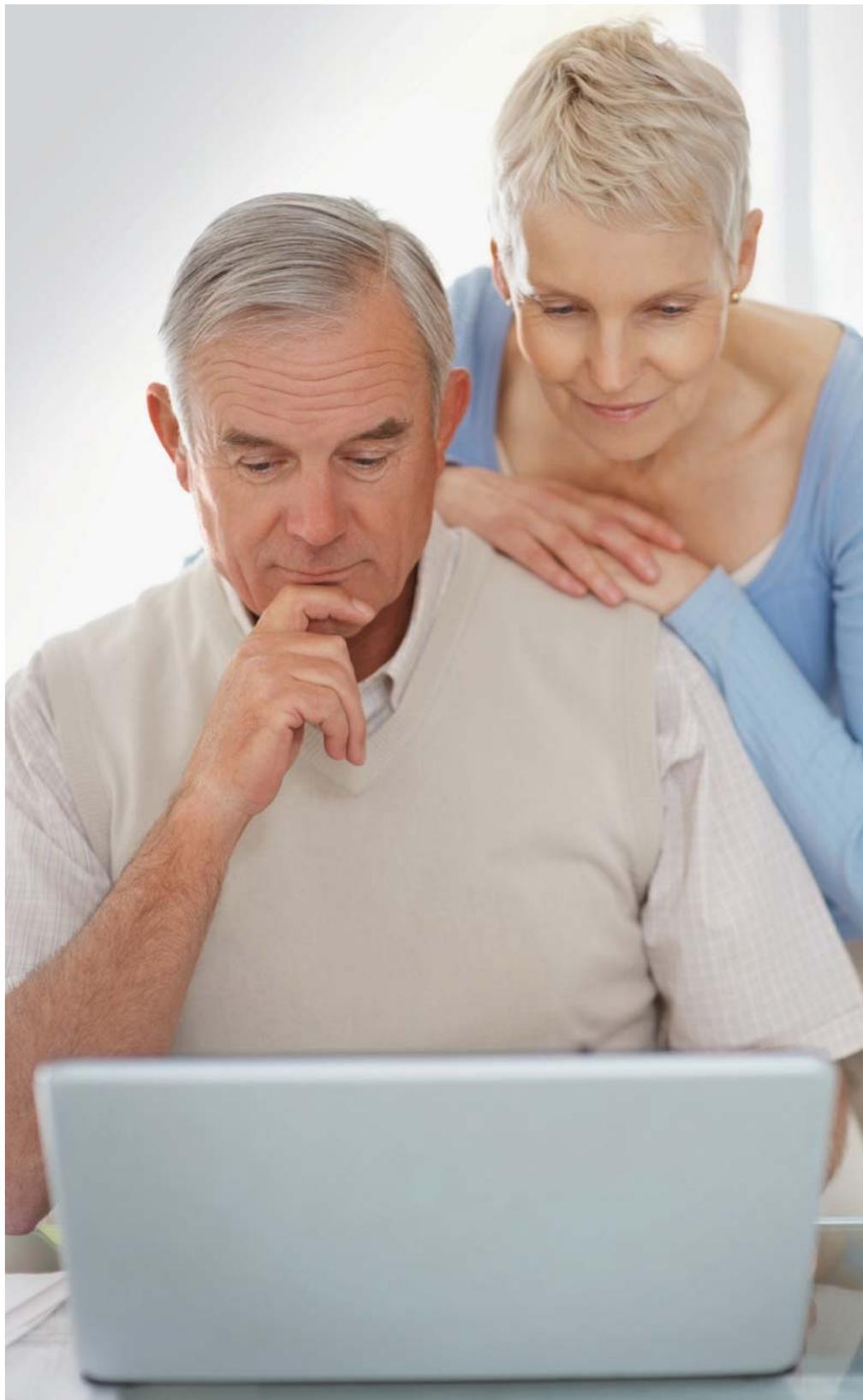

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